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From Fourier's theorem the author finally deduces a theorem for the discontinuous expression of $\frac{f(x)}{t^n}$, viz. :

$$\frac{f(x)}{t^n} = \frac{1}{\pi \Gamma(n)} \int_{-\infty}^{\infty} \int_0^{\infty} \int_0^{\infty} da dv dw \cos \left((a-x)v - tw + \frac{n\pi}{2} \right) w^{n-1} f(a), \quad (4)$$

in which the symbols \int_0^{∞} are both used in a limiting sense.

This theorem, it is observed, is susceptible of important applications, in the theory of definite multiple integrals.

As respects the expression of discontinuity, the formulæ (1), (2), (3), are shewn to be equivalent. The advantage which the second possesses over the first is, that x enters into the second member in a rational form; and the advantage of the third, or Fourier's theorem, over them both, is, that x enters into the second member exponentially, which affords facilities for both the direct and the inverse processes of the differential calculus.

In the fourth theorem the author remarks that both x and t enter exponentially.

Sir William R. Hamilton made some observations on Mr. Boole's communication.

Professor Harrison made some remarks on the peculiarities of the anatomy of the Emu. [This paper, not having been received in proper time for insertion here, will be printed in the Appendix, No. VII.]

Professor Allman announced the addition of Deotis Maritima to the Irish Fauna. This plant he had observed during the latter part of the summer of 1845, in the sand-hills in the neighbourhood of Dungarvan, county of Wexford.

DONATIONS.

Memorie della Reale Accademia della Scienza di Torenzo. Serie Secunda. Tome. VI. Presented by the Academy.

Proceedings of the Philosophical Society of Glasgow,
1842, 1843, 1844, 1845. Presented by the Society.

Astronomical Observations made at the Radcliffe Observatory, Oxford, in the Year 1842. Vol. III. Presented by the Radcliffe Trustees.

Astronomical Observations made at the Observatory of Cambridge. Presented by the Rev. James Chatto, M.A.

Journal of the Asiatic Society of Bengal. No. CLV. 1844. Presented by the Society.

Index and Appendix to the Minutes of Evidence taken before the Commissioners of Inquiry into the State of the Law and Practice in respect to the Occupation of Land in Ireland. Parts IV. and V. Presented by the Lord Lieutenant.

Facts from Gweedore, with Hints to Tourists in Donegal. By Lord George A. Hill, M.R.I.A. Presented by the Author.

On the right Ascensions of the principal fixed Stars, deduced from the Observations made at the Cape of Good Hope, in the Years 1832 and 1833. By Thomas Hudson, Esq. Presented by the Lords Commissioners of the Admiralty.

Proceedings of the Zoological Society of London. Part XII.—1844. Presented by the Society.

Letter on the Irish Colleges Bill. By John D'Alton, Esq. Presented by the Author.

Annual Report of the Royal Cornwall Polytechnic Society. 1844. Presented by the Author.

Facts connected with the social and sanitary Condition of the Working Classes of Ireland. By Thomas Willis, F.L.S. Presented by the Author.

Manual of writing and printing Characters. By B. P. Welme. Presented by the Author.

An ancient Bronze Bit, found at Ballinaminton, King's County. Presented by George Marsh, Esq.